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ARCHITECTURE & FACILITIES**Clean and Green Get a Head of Steam****College campuses are embracing alternative energy, and student activism is the engine of change**

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In 2000 students at the University of Colorado at Boulder voted to purchase alternative energy for three student-run buildings. Putting their money behind their collective social consciousness, they agreed to pay higher activity fees to cover the cost of more expensive wind power. Like a match to gas, the action sparked a movement.

A year later, three Pennsylvania colleges opted to buy wind power to cover a portion of their electricity needs. One, the University of Pennsylvania, agreed to buy 5 percent of its electricity, or 20 million kilowatt-hours, from wind-power sources, later doubling that commitment. The campus is now one of the largest retail customers of wind energy in the country. Elsewhere, the State University of New York at Buffalo in 2003 tripled its consumption of wind-generated electricity to 6 percent of its total energy needs last year, becoming New York State's largest consumer of wind energy. Similarly, the University of Wisconsin at Oshkosh is its state's biggest consumer of green power.

"There has been a remarkable sequence of green-power purchases recently ... remarkable because of the breadth of institutions buying green power and the size of their purchases," says Kurt Johnson, director of the Environmental Protection Agency's Green Power Partnership program.

In the past three years alone, at least 50 colleges have bought wind and other forms of green power for the first time, and many more are showing interest in alternative sources of energy, says Paul Copleman, manager of customer services at Community Energy Inc., a marketer of wind power based in Pennsylvania.

Thinking Green

Green power is electricity created from clean or renewable energy sources -- such as wind, water, and sun -- that flows into a utility's power grid along with energy generated from fossil fuels. Consumers

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who buy green power do not receive that power directly in their homes. Rather, their purchases reduce the use of fossil fuels to make electricity and increase the percentage of green energy on the grid.

Several factors are fueling the greening of energy consumption on college campuses: student activism, the increasing availability and affordability of alternative sources of energy, financial incentives provided by energy companies and municipalities, and the lure of long-term cost savings. As a result, experts say, higher education has become a force in expanding the green-power market.

"Higher education's involvement has been very helpful," says Christine de Azua, assistant director of communications at the American Wind Energy Association. "It's leading by example."

Higher education has long been a pioneer on environmental issues. The energy conservation programs at SUNY-Buffalo started more than 20 years ago. In 1989 the National Wildlife Federation founded its Campus Ecology program, which has helped thousands of students to design and carry out environmental programs at their colleges. The Association of University Leaders for a Sustainable Future, founded in 1992, urges administrators to promote environmental sustainability in their classrooms and policies. More than 50 American colleges have joined the association, including Ball State and Tufts Universities, and the University of Michigan at Ann Arbor.

For greenies, to use alternative fuels is to exercise a personal value, says one energy expert. Students, professors, facilities managers, and top administrators have come together on some campuses to strategize about how to finance and purchase alternative energy sources. Many say they are willing to pay more for a cleaner environment. Green-power advocates proudly note that the evolution of higher education's energy usage is taking place despite lean budgets and the federal government's loosening of environmental regulations.

"It's time for higher education to take a stand," says Omar Blaik, senior vice president for facilities and real estate services at Penn. "Our institution is huge, and every minor change in our behavior has a major impact on the environment."

At least two colleges have made an unusual commitment to go 100 percent green: Colby College, in Waterville, Maine, and Concordia University at Austin, in Texas.

About 90 percent of Colby's electricity comes from a combination of hydropower and biomass, nonfossil organic materials such as vegetation, municipal solid wastes, animal waste, and agriculture byproducts. Colby covers the rest of its power needs by producing steam to heat buildings and spin a turbine that makes electricity.

"At some point, you just have to make the commitment to green

power," says Patricia Crandlemire Murphy, director of Colby's physical plant. "We are paying 9 percent more to purchase a 100-percent- green, 100-percent-Maine power product, and think it is worth the extra cost."

Students have played a leading role in bringing green power to their campuses. They "helped push us to be where we are today," says Mike Coleman, executive director of operations at Penn.

Since the Boulder effort, students at Connecticut College, Eastern University, and the University of North Carolina at Chapel Hill have voluntarily increased their activity fees to help finance green-power purchases. Eastern plans to buy 37 percent of its electricity from wind-power sources.

Liz Veazey, a senior and an environmental-science major at UNC, started the Green Energy Campaign last fall to bring alternative energy to Chapel Hill. "We knew the school and the state are having real budget problems, so we knew we'd have to ask the students," she says. "Boulder did it, so we thought it would work here."

The campaign has raised about \$184,000, to buy solar panels. "I'd love to be able to buy wind," Ms. Veazey says. "I'm jealous of Eastern buying 37 percent; even 5 percent would be crazy."

Students at Chapel Hill are joining with their peers at Duke, North Carolina State and Appalachian State Universities to organize a renewable-energy conference to be held in April.

"We feel that the Southeast is behind in renewable energy, and we want to get students motivated to do more on their campuses," says Ms. Veazey.

Students are also supporting the expansion of green power by purchasing portfolios of "carbon dioxide offsets," projects such as wind farms that reduce greenhouse gas emissions. Last fall members of Lewis and Clark College's environmental club, Students Engaged in Eco-Defense, raised \$16,400 to purchase offsets.

The purchase allowed Lewis and Clark to become the first American college to meet the strict standards of the Kyoto Protocol, the 1997 international treaty to reduce greenhouse gas emissions. The Bush administration withdrew the United States from the accord because it believed compliance could harm the American economy.

Lewis and Clark students living in campus residences also can opt to buy green power by simply checking a box on an electricity form when they move in.

But not all students are happy about spending their money on green power.

"There is a small but very vocal, very conservative minority who are opposed to wind power because of the extra fee that they have to pay," says Eugene Pearson, a junior at Boulder. "There haven't been any protests, just general grumblings."

Some students argue that renewable energy is unreliable. Others worry about migrating birds flying into the large wind turbines, a problem that has largely been corrected, Mr. Pearson says. Still others oppose fee increases of any kind.

Conservation Efforts

To pay for more expensive alternative fuel, some colleges and universities are conserving energy.

Penn started an aggressive energy-conservation program in 2001, cutting peak electricity demand by 10,000 kilowatt-hours, or 18 percent. The savings more than cover the extra \$300,000 green power costs each year. "We've had some pain," says Mr. Blaik. "It's a little colder in the winter and hotter in the summer. But it's okay for someone to wear a sweater in the winter."

Michael Dupre, associate vice president for university facilities at SUNY-Buffalo, estimates that the energy-conservation program there saves \$9-million per year.

States, municipalities, and utility companies offer additional financial incentives to go green. Last year Loyola Marymount University, in Los Angeles, built a 500,000-square-foot solar roof by cashing in on two rebates -- one for \$3.6-million from the Los Angeles Department of Water and Power and another for \$325,000 from the Southern California Gas Company. The total cost of the project was \$4.3-million.

The college will soon install solar cells on two other buildings, for a total investment of about \$600,000. The solar panels will save \$100,000 a year and generate 15 percent of peak electricity needs.

Importance of Fixed Costs

For some colleges, fixed energy costs may be an important consideration in choosing an energy source. During the 2001 California energy crisis, Western institutions experienced firsthand the budget problems that can occur when electricity costs spike unexpectedly.

Concordia signed a contract with Austin Energy's GreenChoice program last summer to meet all of its energy needs -- about 5.5 million kilowatt-hours per year -- for the next 10 years. The purchase price will be locked until 2011 at 2.85 cents per kilowatt-hour.

"It was a lucky gamble," says Ron Petty, Concordia's facilities director.

"The price of natural gas has already gone up three times since we decided to do this."

But locking in at a fixed rate also has risks. The price of wind energy may drop during the next decade as supplies increase. Colleges could end up losing money on the deal, says one wind-energy expert.

At least one college is betting that it will make money from green power. California State University's new Channel Islands campus hopes to generate up to \$2-million annually by building the country's first anaerobic digester, a series of enclosed tanks in which bacteria compost green waste or biomass, such as grass clippings, to produce methane gas.

Local farms would bring the biomass to the university and pay a fee for its disposal. The university would convert the biomass to methane gas and sell it to the plant that supplies the campus with electricity. The leftover compost would then be sold to farms. The digester should be functioning later this year.

"It's clean, and its energy is inexpensive," says George Dutra, the university's associate vice president for operations, planning and construction. "I bet it will spread to other campus communities."

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